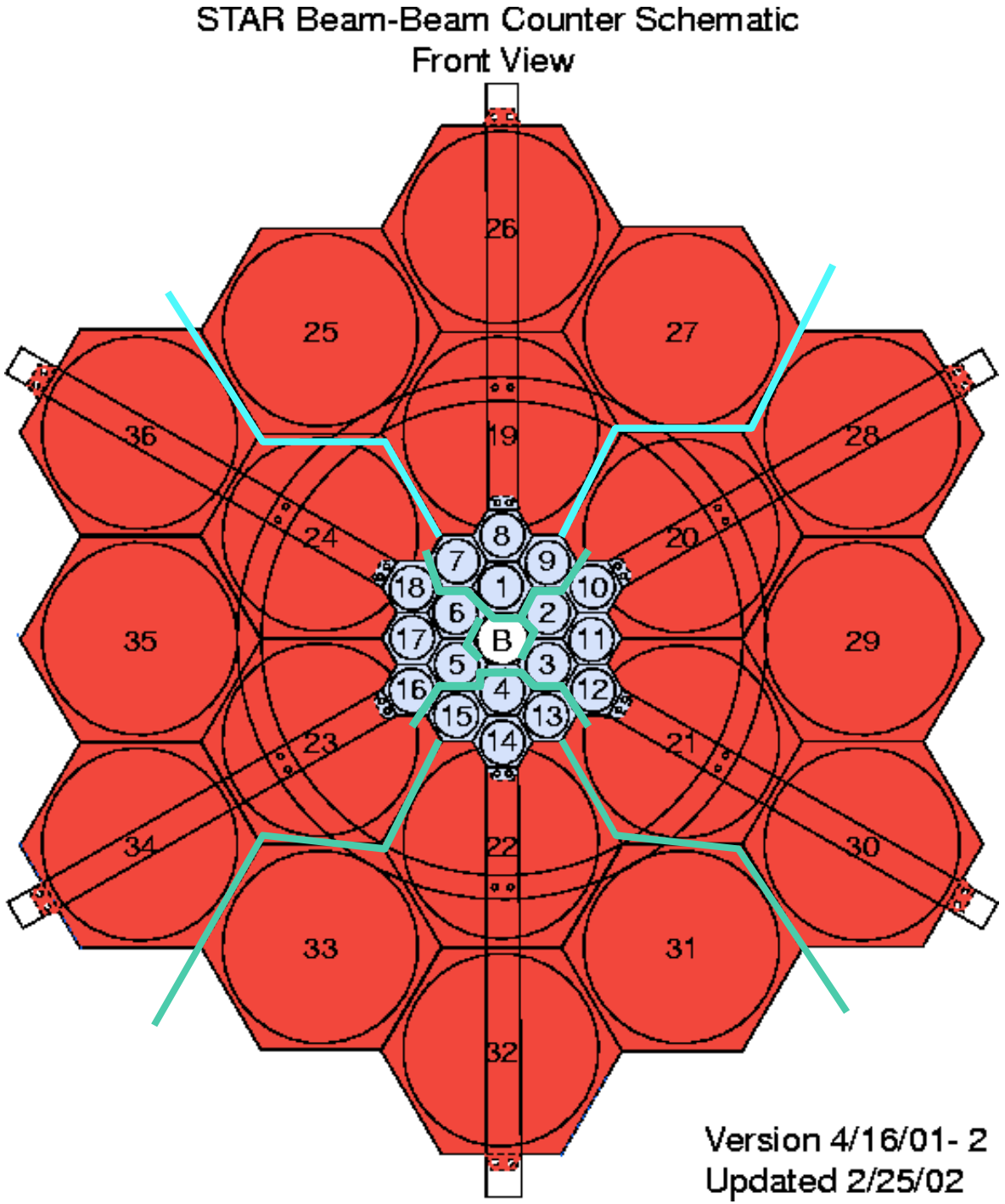
BBC-Trigger Algorithms

Falk Meissner, LBNL
For the STAR Trigger Group

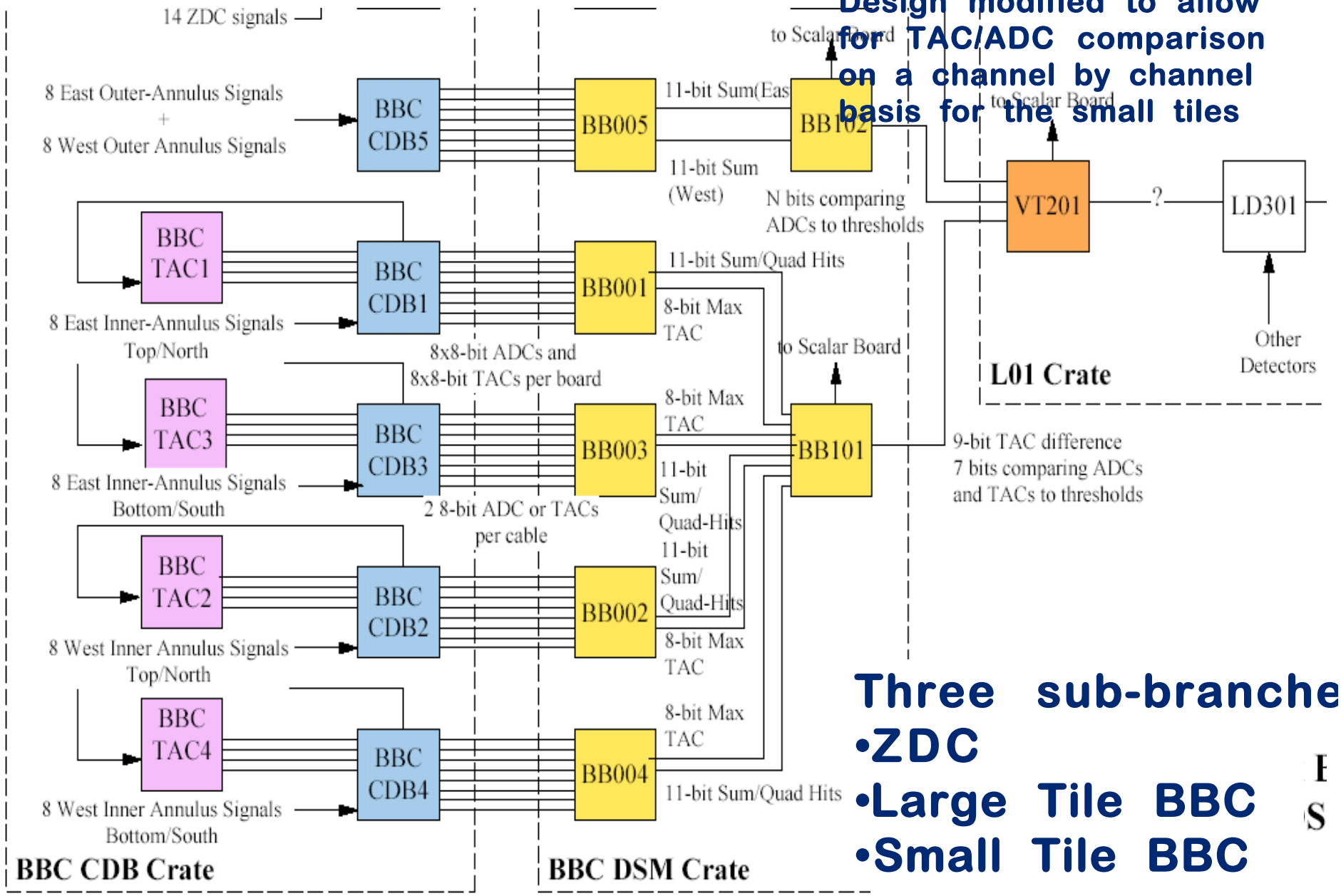
Trigger Meeting
BNL 10/21/02

- Large and Small tiles
- 4 Quadrants T/B/N/S
- Small tiles can be sub-divided in inner and outer circle

2 < eta < 4.5



Vertex Branch DSM Tree



Design modified to allow for TAC/ADC comparison on a channel by channel basis for the small tiles

Three sub-branche

- **ZDC**
- **Large Tile BBC**
- **Small Tile BBC**

What You Get

- **ZDC** (Similar to last year)
  - Threshold on ADC sum separately East/West or E+W
  - ZDC vertex cut by timing (TAC) difference East-West
- **Large Tile BBC**
  - low/high thresholds on ADC sum separately East/West (trigger, luminosity-scaler, topology veto/trigger)
  - Quadrant hit map (topology trigger)
- **Small tile BBC**
  - low/high threshold on ADC sum separately East/West (trigger, topology veto)
  - 'Good hit' map T/B/N/S*East/West -> Asymmetry Scaler
  - Hit-Bits inner/outer ring *E/W -> Asymmetry scaler
  - BBC vertex cut from fastest signal in East and West TAC East-TAC West
- **Not foreseen:**

ADC Sum Large+Small Tiles (Tree layout #of bits between layers)

Some Details

(for the other details check write up)

Small Tile BBC

- 16 channels East/West
- 'Good Hit in a channel':= Leading edge of signal (TAC) within a timing window and ADC above threshold
- Only 'good' hits make it into the ADC sum
- The fastest signal (above the ADC threshold) in East and West are used for vertex cut

Vertex Cut dAu: TAC ZDC – TAC BBC

- Possible (not in parallel to ZDC/BBC vertex cut)

Implementation underway, first version by November

UPC Plans

Low multiplicity topology trigger combined with BBC veto

dAu: -> d-rho cross section

also low mult-minbias events

dedicated run, small data set ?

pp:

(spin dependence in) diffractive reactions

low multiplicity central system with rapidity gaps

see talk of Sandro at the analysis meeting

No simulations yet